

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber used in semiconductor substrate processing, comprising:

a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the electrode having a thickness of about 0.3 inch to 0.5 inch and an electrical resistivity of less than 1 ohm-cm, the electrode having an RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and

a graphite backing plate elastomer bonded to the electrode.

2. (Canceled)

3. (Previously presented) The electrode of Claim 1, wherein the gas outlets have diameters of 0.020 to 0.030 inch and the gas outlets are distributed across the exposed surface.

4. (Original) The electrode of Claim 1, wherein the electrode comprises single crystal silicon or silicon carbide having heavy metal contamination of less than 10 parts per million.

5. (Original) The electrode of Claim 1, wherein the electrode comprises an electrically grounded upper electrode of a parallel plate plasma reactor.
6. (Original) The electrode of Claim 1, wherein the electrical resistivity of the electrode is less than 0.1 ohm-cm.
7. (Original) The electrode of Claim 1, wherein the electrical resistivity of the electrode is less than 0.05 ohm-cm.
8. (Currently amended) A plasma etch reactor having an electrode assembly which includes the electrode of Claim 1, the electrode ~~being bonded to a support member by an elastomeric joint, the elastomeric joint~~ comprising an electrically conductive elastomeric material between the electrode and the ~~support member~~ graphite backing plate, the elastomeric material including an electrically conductive filler which provides an electrical current path between the electrode and the ~~support member~~ graphite backing plate.
9. (Original) A plasma etch reactor having an electrode assembly which includes the electrode of Claim 1, the electrode being resiliently clamped to a support member by a clamping member.
10. (Previously presented) A plasma reaction chamber including the showerhead electrode of Claim 1, the showerhead electrode being bonded or clamped to a temperature-controlled member in an interior of the plasma reaction chamber, the temperature-controlled member including a gas passage supplying a process gas to the showerhead electrode, the temperature-controlled member including a cavity and at least one baffle plate located in the cavity, the gas passage supplying process gas so as to pass through the baffle prior to passing through the showerhead electrode.

11-20. (Canceled)

21. (Previously presented) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber used in semiconductor substrate processing, comprising:

a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the electrode having a thickness of about 0.3 inch to 0.5 inch and an electrical resistivity of less than 1 ohm-cm, the electrode having an RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and

a backing plate elastomer bonded to the electrode.

22. (Canceled)

23. (Previously presented) The electrode of Claim 21, wherein the backing plate includes gas distribution holes communicating with the gas outlets in the electrode.

24. (Canceled)

25. (Previously presented) The electrode of Claim 21, wherein the backing plate is of aluminum, aluminum alloy, silicon carbide or graphite.

26. (Canceled)

27. (Previously presented) The electrode of Claim 1, wherein the gas outlets comprise ultrasonically drilled holes.

28. (Canceled)

29. (Canceled)

30. (Currently amended) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber used in semiconductor substrate processing, comprising:

a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the electrode having a thickness of about 0.375 inch to 0.5 inch and an electrical resistivity of less than 1 ohm-cm, the electrode having an RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and

a graphite backing plate elastomer bonded to the electrode.

31. (Previously presented) The electrode of Claim 21, wherein the backing plate is elastomer bonded to the electrode by thin beads of elastomer between the backing plate and electrode.

32. (New) The electrode of Claim 21, wherein the gas outlets have diameters of 0.020 to 0.030 inch and the gas outlets are distributed across the exposed surface.

33. (New) The electrode of Claim 30, wherein the gas outlets have diameters of 0.020 to 0.030 inch and the gas outlets are distributed across the exposed surface.

34. (New) The electrode of Claim 3, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.

35. (New) The electrode of Claim 32, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.

36. (New) The electrode of Claim 33, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.